



EPA Scientific Advisory Board Biogenic Carbon Emissions Panel

c/o Dr. Holly Stallworth

Designated Federal Officer (DFO)

SAB Staff Office

via email at stallworth.holly@epa.gov

Re: Comments on 3-13-12 *DELIBERATIVE DRAFT Report of the EPA Biogenic Carbon Emissions Panel*

March 16, 2012

Dear EPA Scientific Advisory Board Biogenic Carbon Emissions Panel:

Thank you for the opportunity to comment on the Deliberative Draft Report of the Biogenic Carbon Emissions Panel, dated March 13, 2012.

We commend the panel for retaining important components of the previous report draft and for making several significant improvements. We suggest expanding on the discussion of the GWP_{bio} index methodology. And finally, we'd like to draw the panel's attention to some internal inconsistencies that warrant attention in the next draft.

Positive elements retained from previous drafts:

The March 13 Draft Report retains clear statements that:

- not all biogenic energy sources can be assumed "carbon neutral" (p. 2);
- net emissions must be assessed by comparing the biomass-use scenario with a non-use anticipated baseline scenario (p. 2);
- net emissions (and the factors to balance stack emissions against land-based reabsorption) must be linked to specific regulated facilities (pp. 3, 5); and
- the time path of emissions and reabsorption matters (p. 3).

Improvements over previous drafts:

There is a clear discussion about the significance of the assessment time period and the need to determine this as a policy concern that science can inform but not determine. EPA does not have a clear

policy mandate to choose a single time horizon, but may be able to derive time preferences from RFS targets and other renewable energy priorities embodied in Congressionally-approved measures.

The detailed exposition about estimating BAFs for forest residues using regional decay functions is an important addition that may support development of generic regional factors for this type of feedstock should EPA choose that approach.

The description of alternatives to facility-based BAFs is much improved (pp. 7 and 45), particularly the need for any certification approach to directly address carbon accounting, rather than assuming that existing forest certification systems could be sufficient to demonstrate carbon neutrality.

Topics needing additional explanation:

References to the Cherubini et al. (2011, 2012) approach to modeling net emissions over time (pp. 5, 11-13) would benefit from a more detailed exposition. This approach may be used to develop indices of net atmospheric impact over time, but rather than adopt simplified indices directly from the published studies, additional modeling and policy decisions would be required to apply this methodology.

- The suggestion to use GTP_{bio} rather than GWP_{bio} would introduce an inconsistency in the EPA emissions regulation context. EPA is seeking a methodology for biogenic emissions that parallels direct emissions controls for fossil feedstocks. GWP_{bio} would be the appropriate metric for this purpose; using temperature effects from biogenic sources would not be consistent with the approach to regulating fossil emissions.
- As noted on pp. 11-12, EPA would need to define the time horizon over which the index is calculated. That discussion emphasizes the fact that a 100-year time horizon neglects benefits beyond 100 years. It is equally true that a 100-year time horizon leads to a lower GTP_{bio} index than a 20-year horizon, hence short-term effects receive less emphasis with a 100-year time frame. It would be up to EPA to balance these two effects, based on the importance of near-term emissions reductions compared to long-term. The decision should consider the high risks associated with crossing key near-term climate change thresholds and the inability of human and natural systems to adapt rapidly.
- To develop a GWP_{bio} index, the path of emissions and reabsorption for the biomass energy scenarios would need to be based on the difference between realistic without-biomass and with-biomass scenarios that fit a particular woodshed, rather than using the very simplified assumptions from Cherubini et al. (2011, 2012). The authors are clear that their simple examples are intended to illustrate the index approach and not as a full assessment of particular sources. Models used to develop facility-specific or generic BAFs should incorporate the likelihood that source forests may be lost to development, which would prevent forest regrowth from achieving the predicted offsets to stack emissions.
- Climate scientists should also advise on whether the Bern equations are the best representation of atmospheric “decay”, whether equation parameters will change over time as ocean and terrestrial sinks are saturated (Cherubini et al. assume constant background GHG concentrations and that forest growth is unaffected by climate stresses), and the extent to which the terrestrial sink function is double-counted when assessing net effects of biomass utilization (with- and without-biomass scenarios model regrowth within the woodshed, which is a portion of the global terrestrial sink).
- Finally, any changes to non- CO_2 greenhouse gas emissions due to increased biomass energy use would need to be incorporated – either within the model or as a separate component of the assessment.

Internal contradictions that require resolution:

Additionality and baselines: Despite the emphasis on additionality throughout the draft, and the need to compare biomass use scenarios with an anticipated baseline in order to demonstrate additionality, the Draft Report on p. 46 implies that demonstrating stable carbon stocks on source lands is adequate under a carbon certification system. Shifting the accounting scale from nation, region or woodshed to specific source properties does not remove the burden of demonstrating additionality, and similar challenges related to defining baselines would still apply.

Facility versus regional/national: Despite the emphasis on tying emissions to a particular facility and the problems with a regional approach (p. 26, 27, 28, 30, 41, 42), the Scale paragraph in the Executive Summary (top of p. 6) implies that national accounting would remedy the drawbacks of regional. The new modeling approach advanced on pp. 33-36 also implies that regional or national modeling would be sufficient. This approach is suggested primarily as a means to assess leakage (which by definition requires a broad geographic area), and it could play that limited role (see leakage section of our comments below) without being used to replace woodshed-specific analyses based on stand-level modeling for assessing direct GHG effects.

Distinct feedstocks: Despite the emphasis on the differential impacts of distinct feedstock sources (pp. 2, 3, 6, 7, 10, 11, 13, 16, 17, 43), the new modeling approach advanced on pp. 33-36 suggests combining factors for forest residues and roundwood (p. 35). These distinct feedstocks have very different GHG impacts, and EPA's approach should incentivize choices among feedstocks that lower net emissions. Some report passages imply or declare that it will be impossible to track feedstock by type (pp. 20, 31).

Time-frame: Contrary to statements about the importance of the time pattern of emissions, the Draft Report asserts that fluctuations within a 100-year time frame are irrelevant (pp. 5 and 10-11 and 26). These statements are based on studies showing that *peak warming* is not sensitive to the timing of emissions within a 100-year timeframe. But peak warming is not the only metric of concern. The *pace* of warming is also important as it relates to the ability of human and natural systems to adapt and how soon we cross key irreversibility thresholds (e.g. melting permafrost). Kirschbaum (cited on p. 13) discusses several different climate metrics, but this aspect of his work seems to be neglected by the SAB.

Leakage: The importance of incorporating leakage in assessments of net GHG emissions is emphasized in some passages (pp. 3-4, 6) but others suggest excluding leakage factors which are beyond the control of a regulated facility (pp. 21-22).

The modeling approach suggested on p. 33-36 incorporates both "negative leakage" (increases forest carbon by increasing forested land or intensifying management) and "positive leakage" (reduces forest carbon by shifting crops or pulp/sawlog harvests or land conversion to other regions as biomass replaces these competing land uses near a new facility). The motivation for advancing this model appears to be the importance of "negative leakage" consisting of new forest plantations, or intensified management that increases forest carbon stocks, due to bio-energy market incentives. The SAB has already suggested a low or zero BAF for short-rotation energy crops on land with previous low-carbon land use (p. 6), and longer-rotation woody crops may also be planted specifically for biomass energy uses at sufficiently high prices (based on most modeling, however, these prices would need to be well above current or foreseeable levels). Rather than change the entire assessment approach to reflect this relatively small leakage adjustment, EPA may adapt a default factor approach as we have suggested in previous comments. A relatively low "negative leakage" factor might be assumed for each region based on the

proposed modeling approach and using conservative assumptions about prices and market responses, with updating over time as monitoring results come in. A facility might then petition for more favorable BAF treatment by demonstrating a direct link to newly forested source lands via advance supply contracts or other binding agreements.

On the “positive leakage” side, conversion to biomass plantations may indirectly cause carbon reductions elsewhere by shifting cropping activity or development pressures. Similarly to the suggested approach for negative leakage, a relatively high positive leakage factor based on the suggested regional/national models might be built into the scenarios used to develop GWP_{bio} indices. Facilities might petition for more favorable (lower) factors by demonstrating that their feedstock source does not shift land use pressures elsewhere.

Thank you for the opportunity to comment on the on-going SAB process and for supporting in-depth discussion and review of these important issues.

Sincerely,

Ann Ingerson
Senior Economist
The Wilderness Society
Craftsbury Common, VT
ann_ingerson@tws.org